

Table 1. Emission Related Chemical and Physical Properties of Gasoline Blend Components

Properties	MTBE	Ethanol	LSR - C ₅ -200	Isomerate	Alkylate	Reformate	FCC Gasoline
Octane: (R+M)/2	110	113	63	83	92-94	86-94	86
RVP: psi.....	8	see note	10	12	4-6	4	6-7
E200: vol%.....	100	100	100	100	30	0	47
E300: vol%.....	100	100	100	100	94	70-80	77
Benzene: vol%.....	0	0	.01-3.0	0	0.1	0.2-3.0	0.5-1.0
Aromatics: vol%	0	0	.01-3.0	0	0.4	50-65	20-30
Olefins: vol%	0	0	0	0	0.5	0	25-40
Sulfur: ppm	0	0	0-200	0	0	0-25	100-1,500
Oxygen: wt%.....	18.2	34.7	0	0	0	0	0

Note: Ethanol exhibits a high vapor pressure when blended with the hydrocarbons of a gasoline blend. The RVP impact of the ethanol is quite non-linear. The addition of 5 percent ethanol to a base 9 RVP gasoline will raise the RVP by slightly over 1 psi, while the addition of 10 percent ethanol will increase the mixture a little less than 1psi.

Definitions of abbreviations and technical terms:

MTBE = methyl tertiary butyl ether;

LSR = light straight run gasoline

FCC = fluid catalytic cracking;

RVP = Reid vapor pressure;

ppm = parts per million;

psi = pounds per square inch;

vol% = volume percent; wt% = weight percent.

Sources: American Petroleum Institute. *Alcohols and Ethers: A Technical Assessment of Their Application as Fuels and Fuel Components* (Washington, DC: API Publication 4261); and Piel, W.J. and R.X. Thomas. "Oxygenates for reformulated gasoline," *Hydrocarbon Processing* (July 1990), p. 68.
